In the Abstract

Please delete the current Abstract in its entirety and substitute therefor the following New Abstract shown on the next page.

New Abstract

Magnetoresistive random access memory (MRAM) is used to provide in-pixel memory circuits for display devices. A memory circuit includes two MRAMs, each coupled to a respective input of a flip-flop circuit. A display device includes a plurality of pixels, each associated with a memory circuit. A bit line passes over and contacts a first MRAM in a first direction and a second MRAM in a second direction which is substantially opposite to the first direction, to provide opposite resistance states in the two MRAMs. The bit line does not pass over a word line thereby avoiding or reducing overlap capacitance losses. The word line is formed during a same masking stage as a gate line. The bit line is formed during a same masking stage as a column line.